

AMENDMENTS TO THE DRAWINGS

Please replace Fig. 2A and 2B with the attached Replacement Figures in which labels are translated into English.

Attachment: Two (2) Replacement Sheets

REMARKS

Claims 1-6 are all the claims pending in the application. By this Amendment, Applicant amends claim 1. No new matter is added. Support for the amendment is found, *e.g.*, at pages 2-3 of the specification as filed. Reconsideration and allowance of claims 1-6 are respectfully requested in view of the following remarks.

I. Preliminary Matters

Applicant thanks the Examiner for acknowledging the claim to foreign priority and for confirming that the certified copy of the priority document was received.

Applicant also thanks the Examiner for initialing the references listed on Forms PTO/SB/08 submitted with the Information Disclosure Statement filed on April 16, 2004.

II. Objections to the Specification

The Examiner has objected to the specification for not having included specific reference to various elements/items shown in the figures and for not specifically claiming the figures so that their meaning can be understood. Applicant respectfully requests the Examiner to withdraw these objections to the specification in view of the self-explanatory amendments to the specification. No new matter is being added.

III. Objections to the drawings

The drawings are objected to because Figs. 2A and 2B contain disclosure which is presented in German. Applicant has prepared new figures in which the specific elements are

labeled in English. No new matter is being added. Accordingly, Applicant respectfully requests the Examiner to withdraw the objection to the drawings.

IV. Rejections under 35 U.S.C. § 112, first paragraph

The Examiner rejected claims 1-6 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner contends that claims 1-6 “set forth steps and furthermore make reference to variables and processes which have not been adequately described so that one of ordinary skill in the art can understand how to perform the claimed invention.” *See* page 3 of the Office Action. Applicant traverses this rejection.

The process of optimizing the operation of a plurality of compressor assemblies of a natural-gas compression station is comprehensibly set forth in the specification, and the optimization as well as the respective variables are amply described, *e.g.*, at pages 1-3 of the specification. Specifically, on page 1 of the specification, compressor assemblies are introduced. The disclosure describes the assemblies as being driven by rotors, by means of which the gas transport through the natural-gas compression station is carried out. Subsequently, the specification refers to characteristic maps of the compressor assemblies. Such characteristic maps are well known in the art. European Patent Application 0 769 624, for example, which has been incorporated into the present application by reference, discloses in Fig. 1 a typical characteristic compressor map.

The steps for optimizing the operation of the compressor assemblies are described as follows, *e.g.*, at paragraphs [007]-[009] and [015]-[019] of the specification. First, at least one

compressor assembly is run. After starting a second compressor assembly, the rotational speeds of these two compressors are run in a fixed speed ratio. In a second step, this ratio is varied until a certain event occurs, namely until certain valves are closed. The specification further makes clear that the operating points of the compressor assemblies are located in the characteristic maps and that these maps contain lines that define a maximum efficiency. The disclosure continues with the description of leading the operating points of the compressor assemblies toward these maximum efficiency lines. In a third step, it is disclosed that a certain rotational speed of the compressor assemblies is calculated in which the compressor station has a minimal fuel consumption and a minimal emission of exhaust-gas quantity. Based on these rotational speed values, in a fourth step, the speed ratio is adjusted and stored.

Thus, given this detailed disclosure, it is apparent that one of ordinary skill in the art could readily implement the steps of optimization.

In addition, with respect to claim 1, the Examiner notes that the term “fixed rotational speed ratio” is allegedly unclear and provides two possible interpretations. However, Applicant notes that the mere fact that a term encompasses multiple embodiments is merely a matter of claim breadth, not an issue of indefiniteness. See MPEP 2173.04. The grounds of rejection merely assert two alternative embodiments, and fail to pinpoint an actual indefiniteness that would justify a rejection under 35 U.S.C. §112.

Furthermore, the Examiner contends that “it is unclear what specific characteristic map is being referred to.” As already noted above, characteristic maps are commonly used in the field

of endeavor and one of ordinary skill in the art would clearly know how to implement the steps of optimization by using such maps. Applicant is not required to claim one "specific" characteristic map. See, again, MPEP 2173.04. However, as an accommodation, Applicant is amending the specification to provide background information known to those skilled in the art, namely a further description of the characteristic map of the compressor assembly, including a description of what the characteristic map displays, and noting that the operating point of the compressor assemblies is located inside the characteristic maps.

The Examiner also rejected claim 1 under 36 U.S.C. § 112, first paragraph, because the term "an equal percentage throughflow quantity adjustment" is allegedly unclear.

Again, 35 U.S.C. 112 requires the specification to be enabling only to a person "skilled in the art to which it pertains, or with which it is most nearly connected." The specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public. See MPEP 2164.05(a).

With respect to "equal percentage throughflow quantity adjustment", Applicant submits that this term is clear in its context even for a person not skilled in the art. The plain meaning of the words tells the reader of the specification that the throughflow quantity of the natural gas is adjusted. This is done by varying the rotational speeds of the compressor assemblies by which the throughflow quantity is changed, whereas an equal percentage of the throughflow quantity of the gas is guaranteed. See paragraph [007] of the specification.

In addition, the Examiner asserts that the specification does not describe how to perform “thereafter leading the operating points of the compressor assemblies in their characteristic maps toward the maximum efficiency line,” as recited in claim 1, and how to perform “wherein the operating points of the compressor assemblies in their characteristic maps are led as far as possible toward the maximum efficiency line,” as recited in claim 2. Again, the grounds of rejection fail to demonstrate that one of ordinary skill in the art would have been unable to make and use the claimed invention. Applicant submits that the specification is in full compliance with 35 U.S.C. §112, first paragraph, and directs the Examiner’s attention to MPEP 2164.01 for the appropriate burden of proof to demonstrate a lack of enablement.

Furthermore, regarding claim 1, the Examiner asserts that it is allegedly unclear what determines an “optimum” value and the process of performing “a reciprocal mutually coordinated variation of the rotational speed desired values.” *See* pages 3 and 4 of the Office Action. The grounds for rejection further maintain that the disclosure allegedly does not describe what a reciprocal mutually coordinated variation is and that it is allegedly unclear if this process is actually performed on the compressors or if this is a mathematical or control step done in a controller to determine a desired value.

Regarding claim 3, the Examiner asserts that no description has been provided with regards to what is meant by the term “sequence control.” With regard to claim 4, the relationship between the controlled variables of the station controller and the mechanism set forth for performing the steps in claim 1 has allegedly not been described. Finally, the Examiner contends

that the relationship of the “optimization computer” to the rest of the control system has not been described and that it is not described how it accomplishes a “mutually coordinated variation” of the rotational speeds.

Again, “[a]n inventor need not . . . explain every detail since he is speaking to those skilled in the art. What is conventional knowledge will be read into the disclosure. . . . ‘It is well settled that the disclosure of an application embraces not only what is expressly set forth in words or drawings, but what would be understood by persons skilled in the art. . . . [T]he applicant ‘may begin at the point where his invention begins, and describe what he has made that is new and what it replaces of the old. That which is common and well known is as if it were written out in the patent and delineated in the drawings.’” In *re* Howarth, 210 USPQ 689, 691-92 (CCPA 1981) (quoting *In re* Chilowsky 108 USPQ 321, 324 (1954) and *Webster Loom Co. v. Higgins et al.* 105 U.S. 580, 586 (1882)).

It is clear, for example, to one skilled in the art how a coordinated variation of rotational speeds of compressor assemblies needs to be performed. In addition, Applicant has amended claim 1 to more clearly define that the optimum rotational-speed desired values are rotational-speed values in which the compressor station has a minimal fuel consumption and a minimal emission of exhaust gas.

The term “sequence control” is defined in paragraphs no. [008] and [009] at page 3 of the specification. The relationship of the “optimization computer” to the rest of the control system is depicted in Fig. 2 and is also described in paragraph no. [012] of the specification, where it states

that “[t]he trimming or the mutually coordinated variation of the rotational-speed desired values . . . can advantageously be implemented by means of an optimization computer arranged between the station controller and the individual rotational-speed controllers of the individual compressor assemblies.”

Therefore, the present application includes ample disclosure to assist those skilled in the art to make and use the invention, including implementing an appropriate method for optimizing the operation of a plurality of compressor assemblies of a natural-gas compressing station in the manner claimed.

With this disclosure, all that is needed to practice the invention claimed [i.e., running speeds in a fixed speed ratio, varying the ratio until a certain event occurs, leading the operating points towards a maximum efficiency by further varying the ratio, determining optimum desired speed values, and finally adjusting and storing the new fixed speed ratio] would be routine for one skilled in the relevant art.

Therefore, Applicant respectfully requests that the rejection of claims 1-6 under 35 U.S.C. § 112, first paragraph, be reconsidered and withdrawn.

V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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